

## **ABSTRACT**

A programmable look up table (LUT) circuit for an integrated circuit, comprising:  
one or more secondary inputs; and one or more configurable logic states; and two or  
more LUT values; and a programmable means to select a LUT value from a secondary  
5 input or a configurable logic state.

A programmable macro look up table (macro-LUT) circuit for an integrated  
circuit, comprising: a plurality of LUT circuits, each of said LUT circuits comprising a  
LUT output, at least one LUT input, and at least two LUT values; and a programmable  
means of selecting LUT inputs to at least one of said LUT circuits from one or more  
10 other LUT circuit outputs and external inputs, and selecting LUT values to at least one of  
said LUT circuits from one or more other LUT circuit outputs and configurable logic  
states, said programmable means further comprised of two selectable manufacturing  
configurations, wherein: in a first selectable configuration, a random access memory  
circuit (RAM) is formed, said memory circuit further comprising configurable thin-film  
15 memory elements; in a second selectable configuration, a hard-wire read only memory  
circuit (ROM) is formed in lieu of said RAM, said ROM duplicating one RAM pattern in  
the first selectable option.